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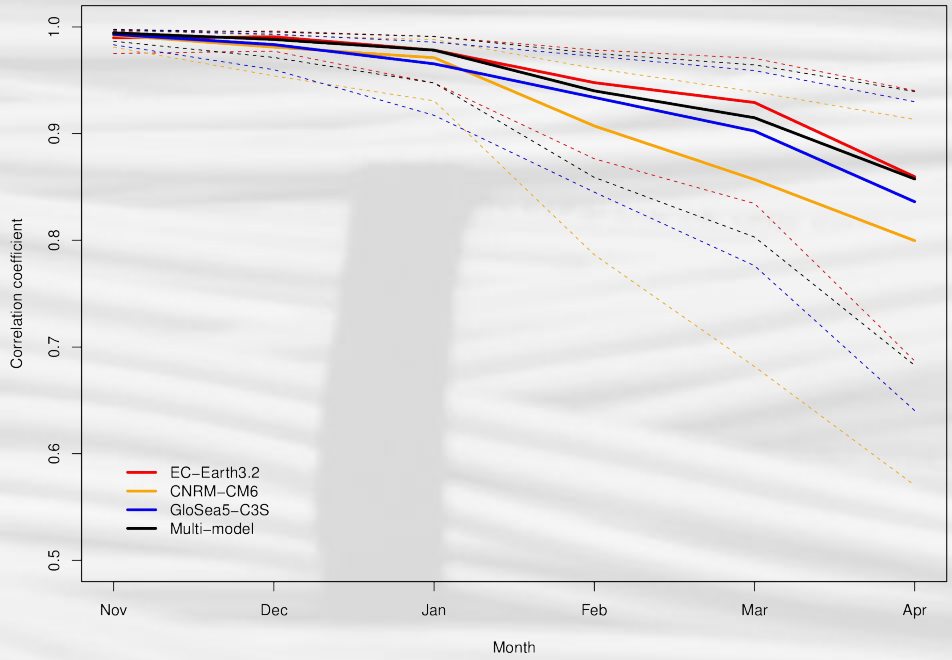
EXCELENCIA SEVERO OCHOA

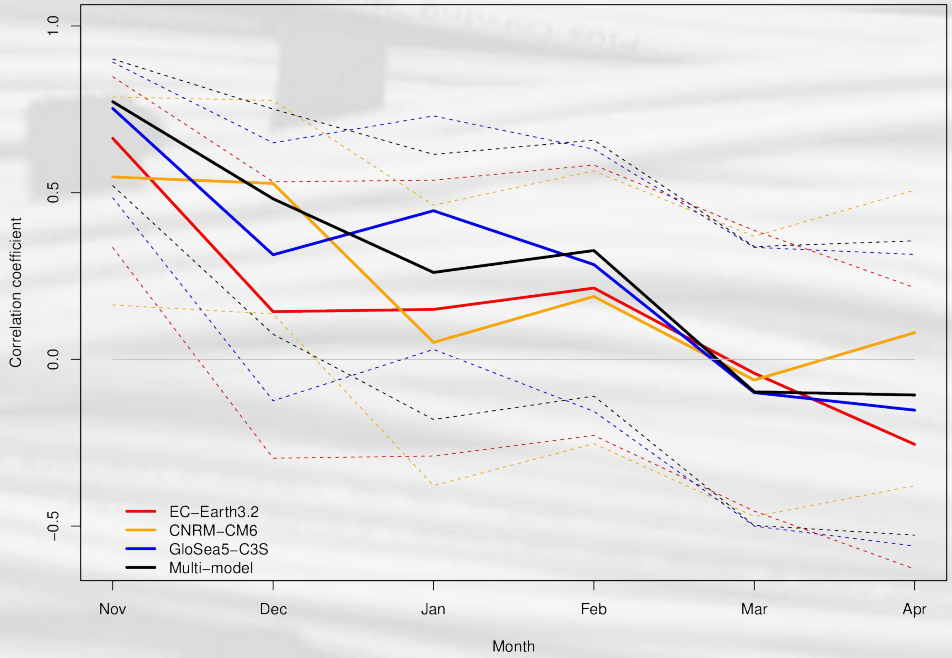
APPLICATE GA
WP5
BOG session

BSC, 1/2019

Acosta Navarro, Ortega, Torralba, Massonnet, Bellprat, Smith, Batté, Doblas-Reyes

Skill in NINO3.4 and NAO monthly indices
Nov forecasts 1993-2014 (vs. ERA-Int)





NAOI (following the definition by Stephenson et al., 2006)

DJF Anomaly correlation coefficient

EC-Earth3.2: 0.24 (0.30 EOF) - 25 members

CNRM-CM6: **0.46*** (0.48* EOF) - 25 members

GloSea5: **0.49*** (0.42* EOF) - 14 members

Multi-model: **0.56*** (0.56* EOF) - 64 members

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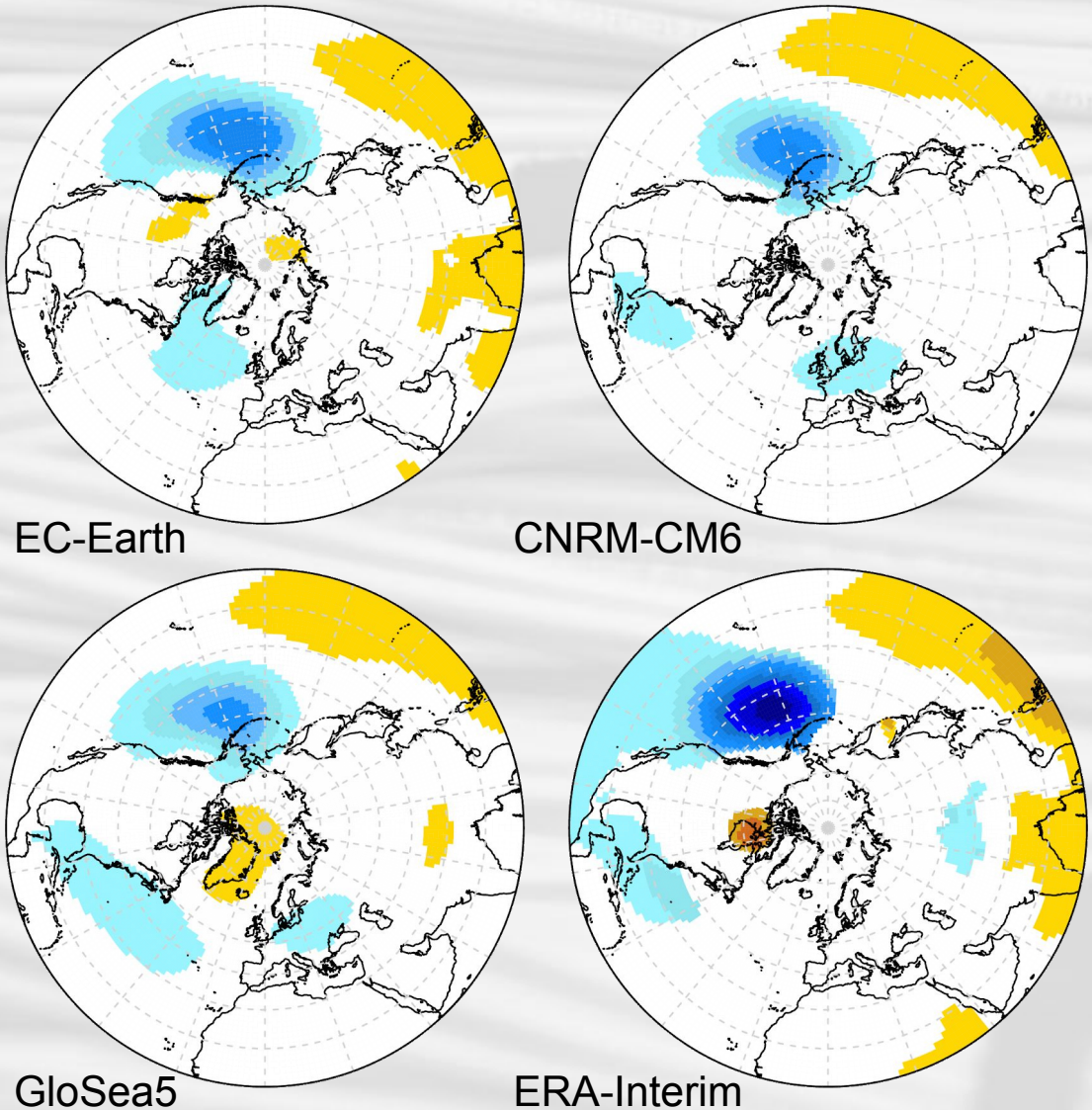
Sea level pressure regressed onto NINO3.4
Nov forecasts 1993-2014 (in each system)



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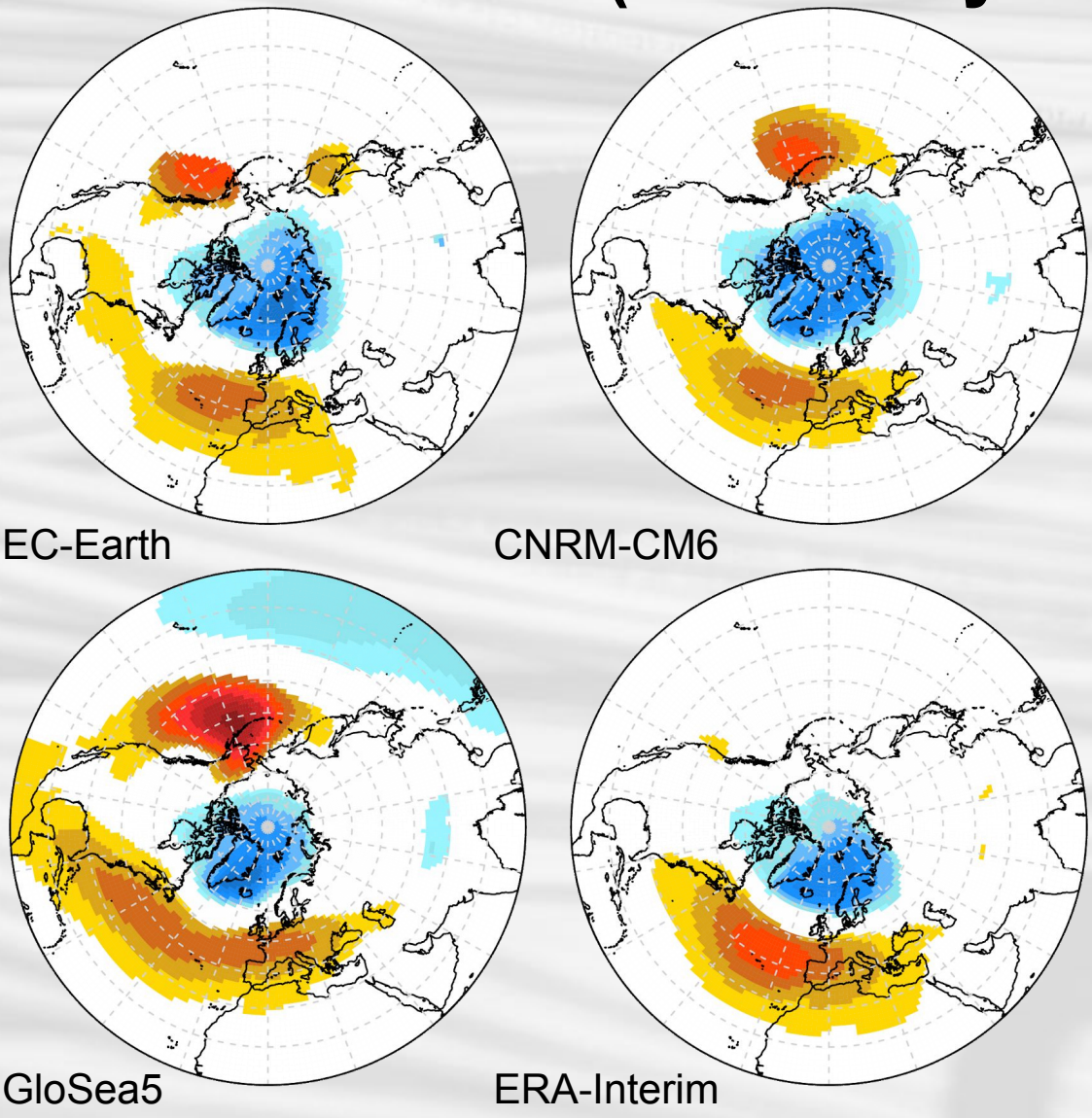
Sea level pressure regressed onto NAOI
Nov forecasts 1993-2014 (in each system)



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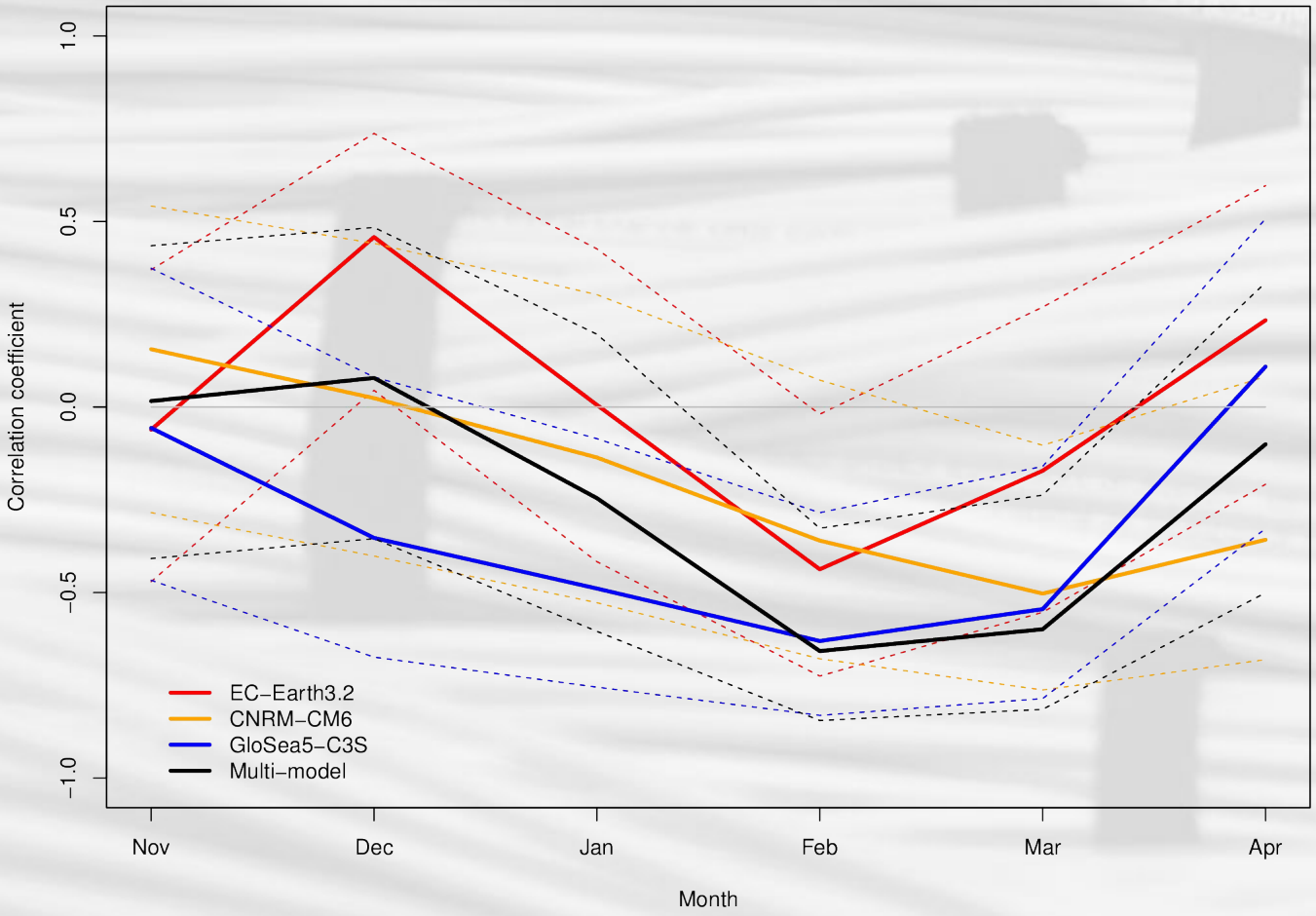
Monthly NINO3.4 and NAO correlation
Nov forecasts 1993-2014



Mean DJF ACC

EC-Earth3.2: 0.03

CNRM-CM6: -0.18

GloSea5: **-0.65***

Multi-model: -0.35

ERA-Interim: -0.22

For the period 1951-2011 Zhang et al. (2018) reported R = -0.23

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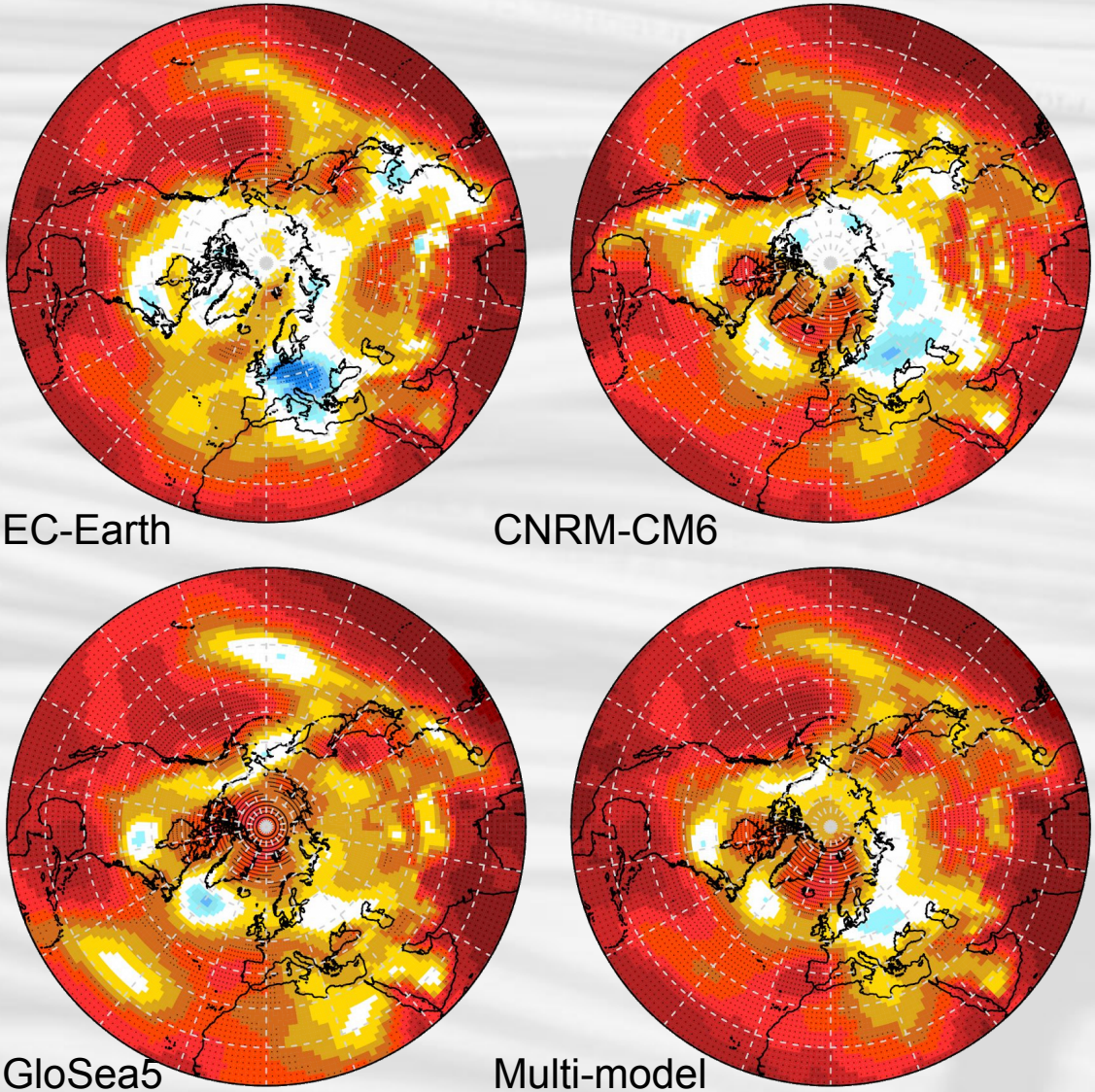
Mean DJF sea level pressure ACC
Nov forecasts 1993-2014 (vs. ERA-Int)



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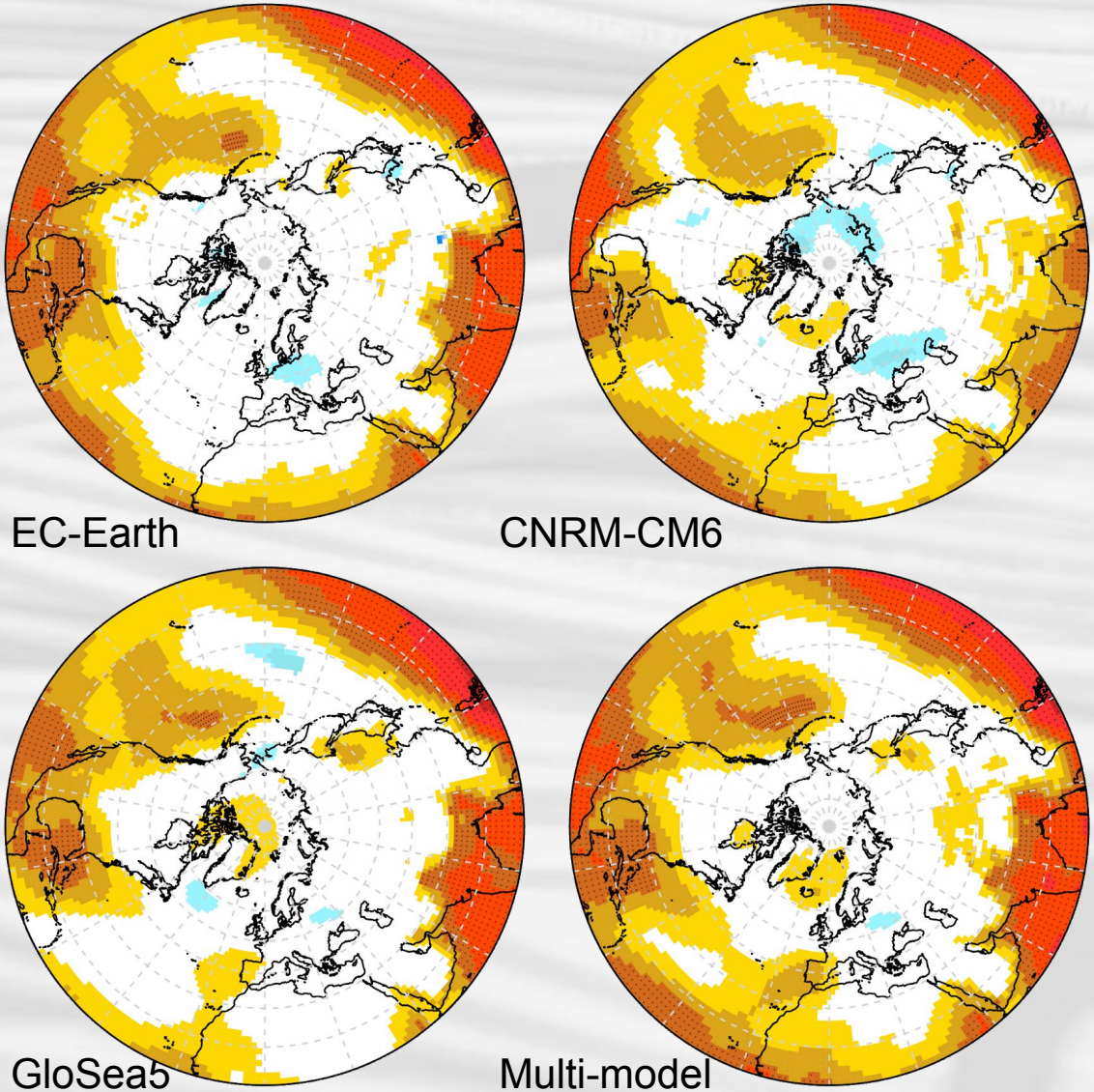
Mean DJF SLP RMSSS (RPC-corrected)
Nov forecasts 1993-2014 (vs. ERA-Int)



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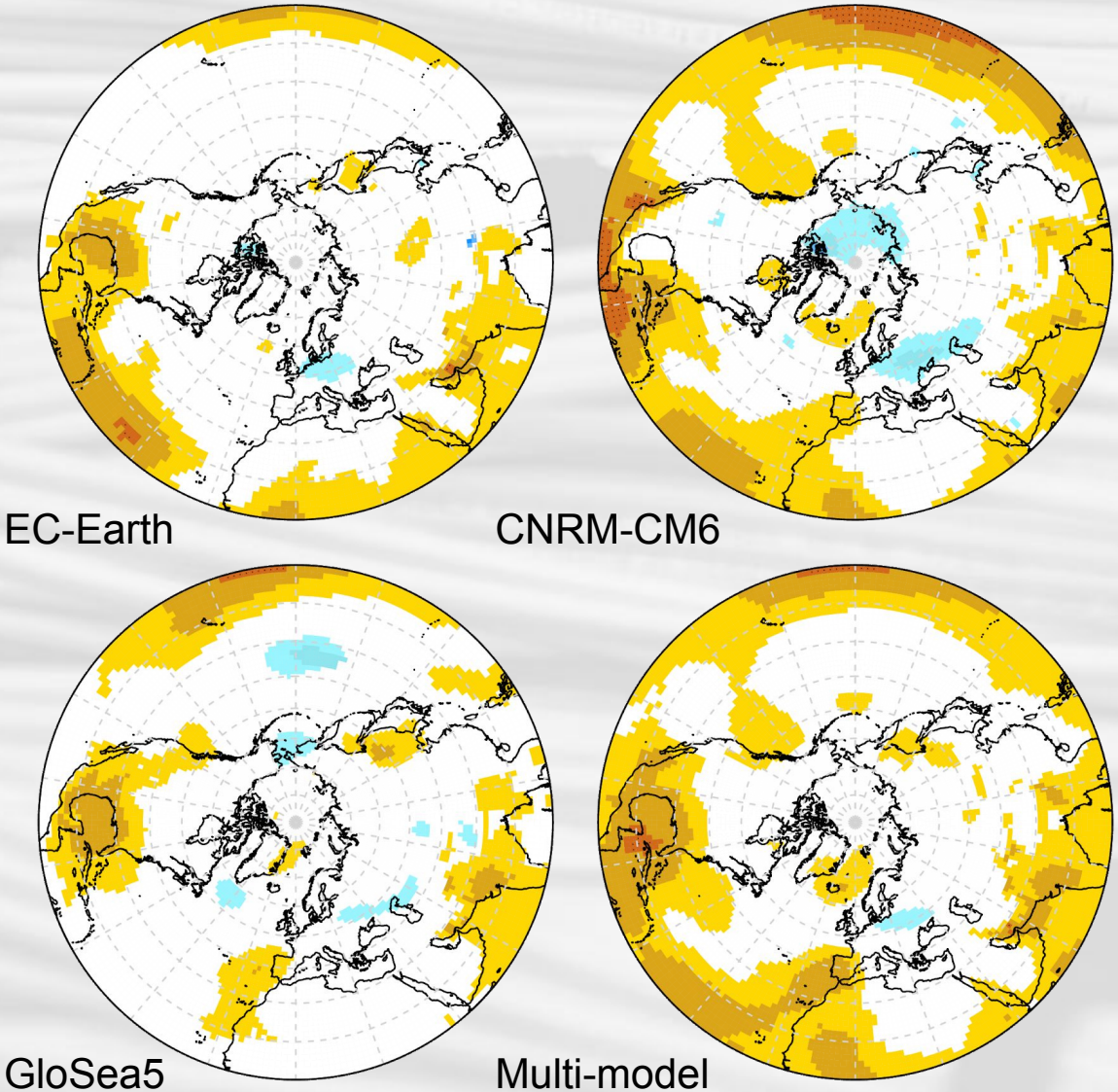
DJF sea level pressure RMSSS without NINO
Nov forecasts 1993-2014 (vs. ERA-Int)



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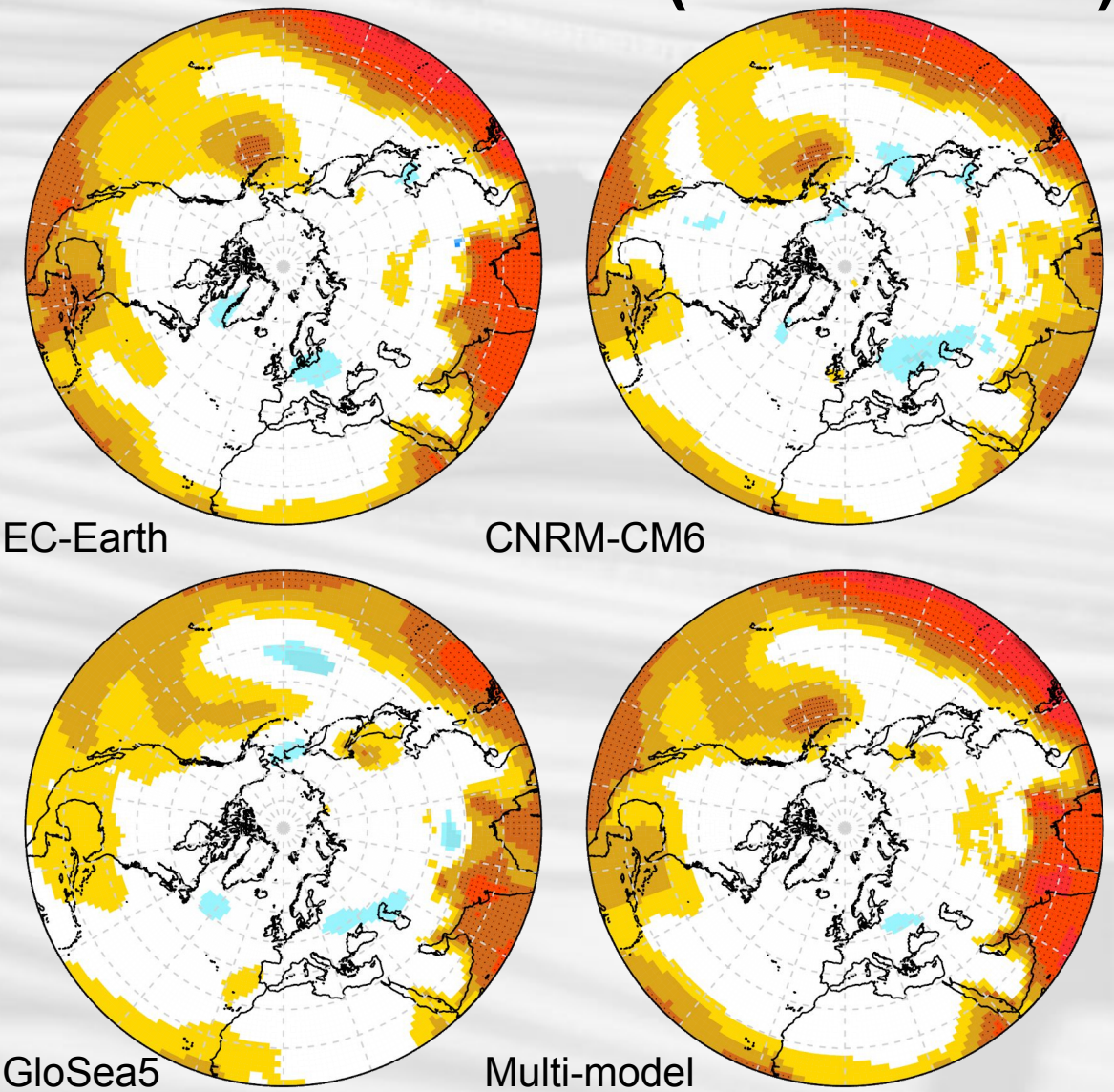
DJF sea level pressure RMSSS without NAO
Nov forecasts 1993-2014 (vs. ERA-Int)



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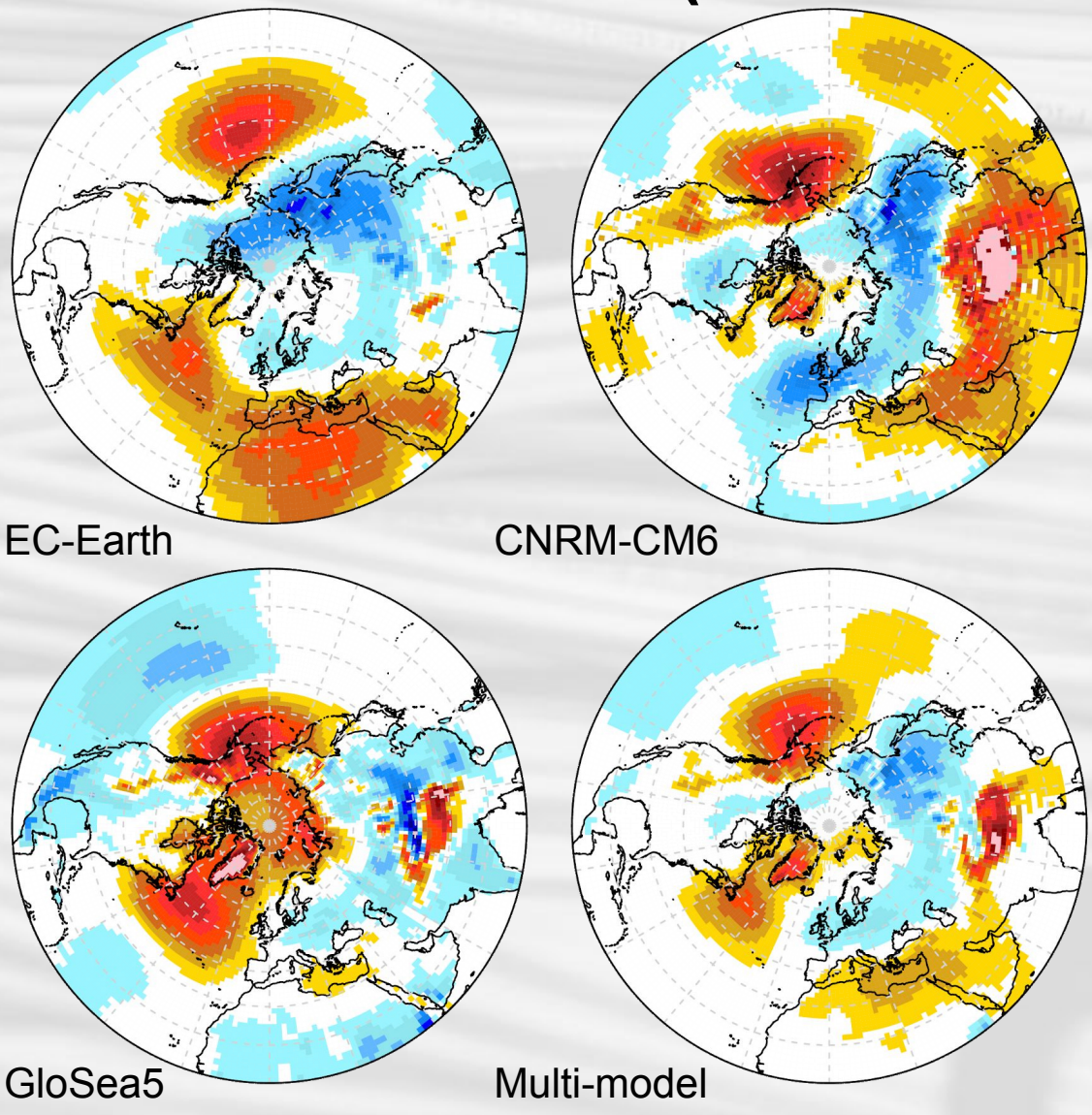
Preliminary conclusions

- ENSO and NAO are significantly anti-correlated in GloSea5 and not in the other systems.
- ENSO is the largest source of predictability for slp, tas and precip. Models agree on this.
- NAO is an important source of predictability for surface temperature over Eurasia and northern Africa. Models don't agree that well.
- NAO barely affects precipitation predictability and there is model disagreement.
- Some differences in ENSO teleconnection to North Atlantic between models. This can affect NAO skill in each system.

Mean DJF sea level pressure bias (Pa)
Nov forecasts 1993-2014 (vs. ERA-Int)



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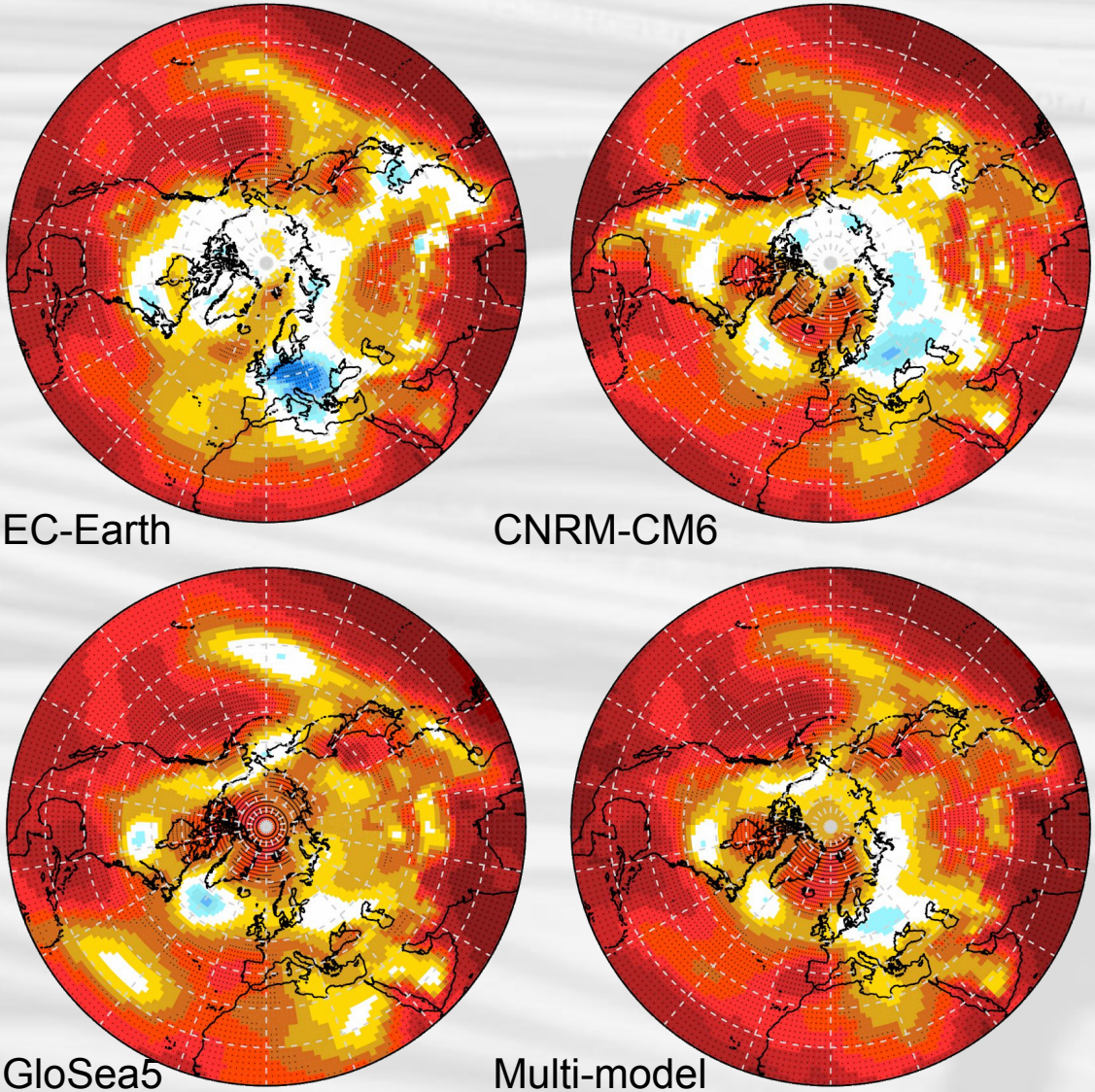
Mean DJF sea level pressure ACC
Nov forecasts 1993-2014 (vs. ERA-Int)



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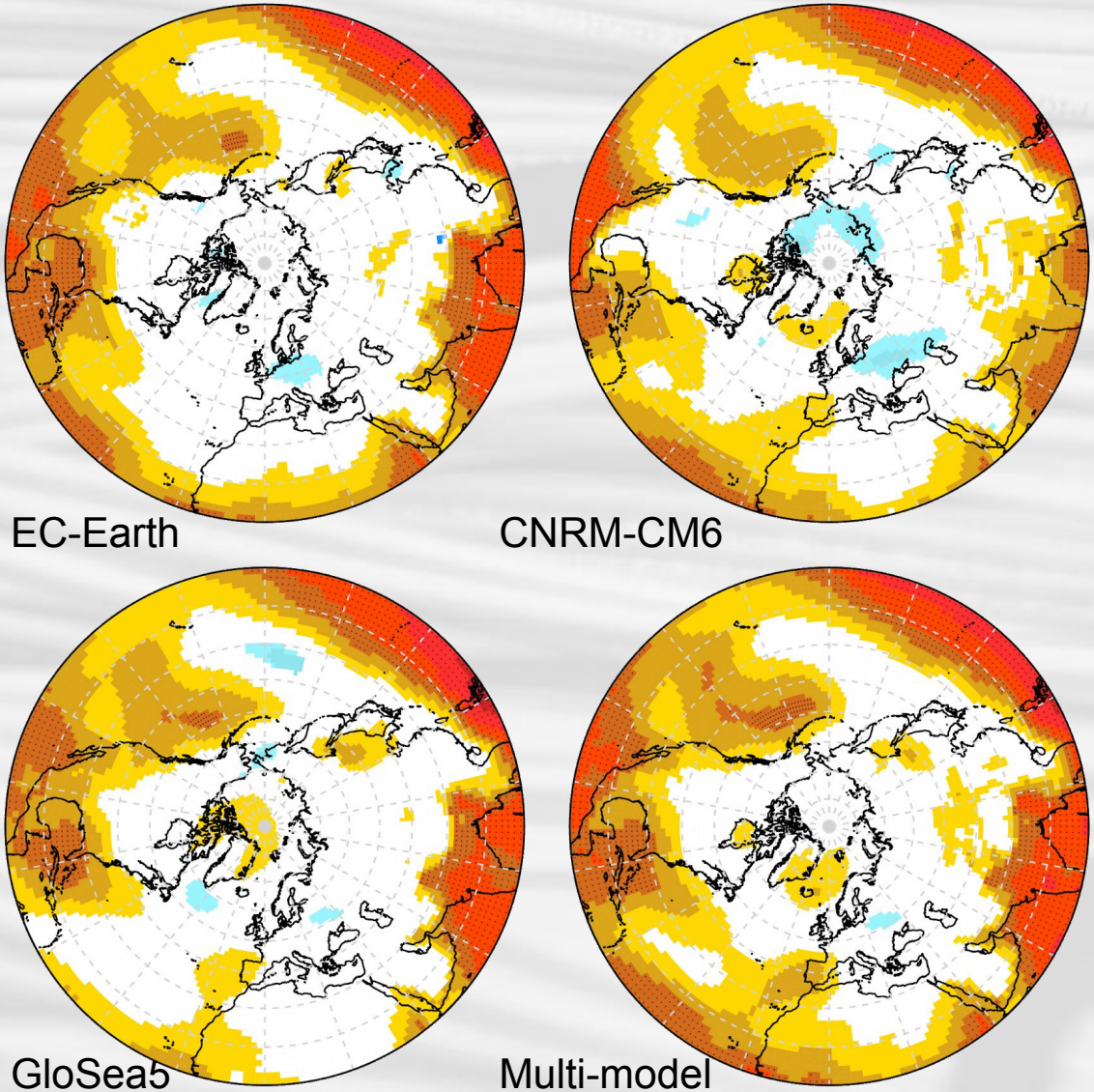
Mean DJF SPL RMSSS (RPC-corrected)
Nov forecasts 1993-2014 (vs. ERA-Int)



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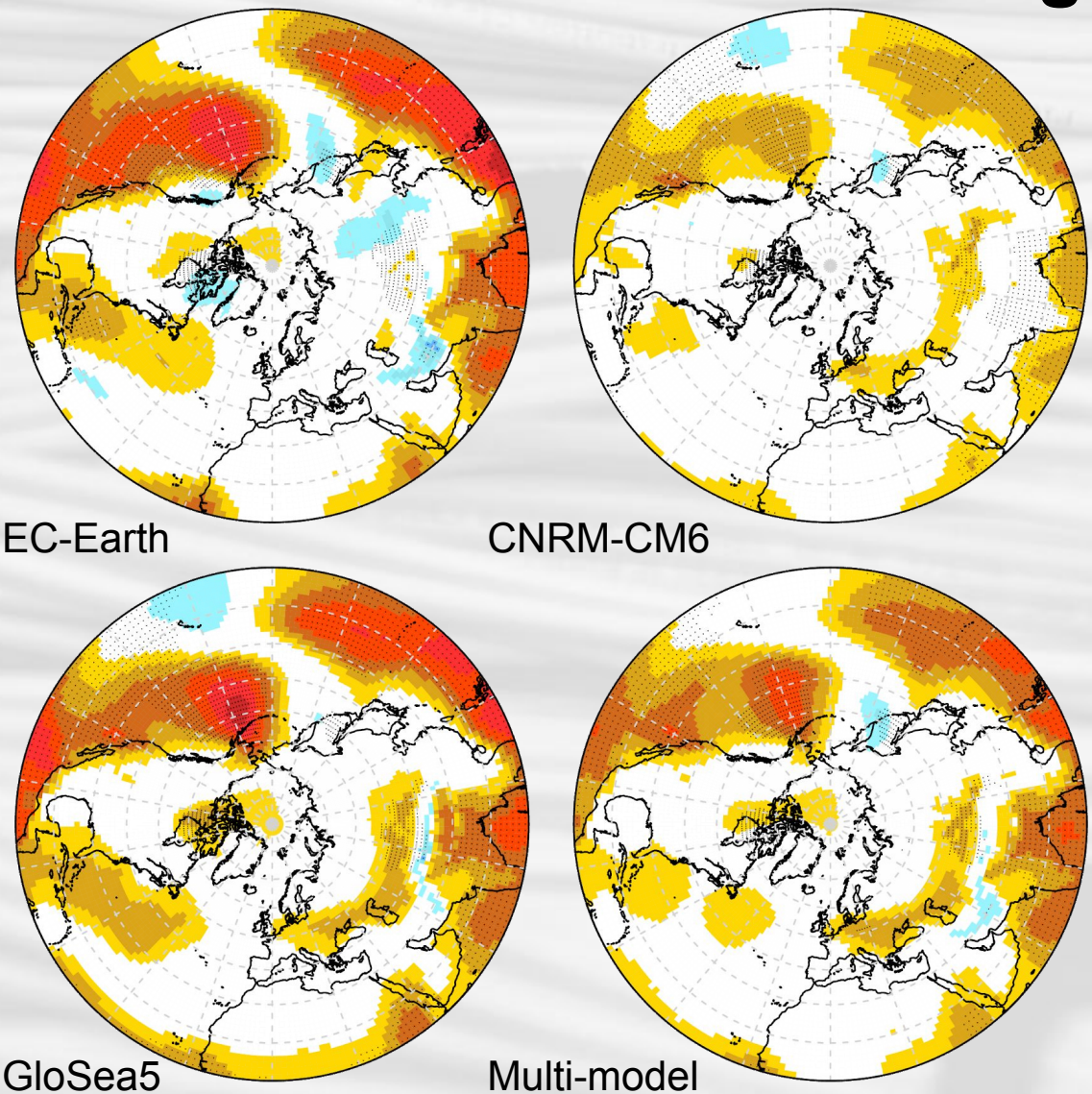
Mean DJF sea level pressure ACC difference in forecasts with and without NINO signal



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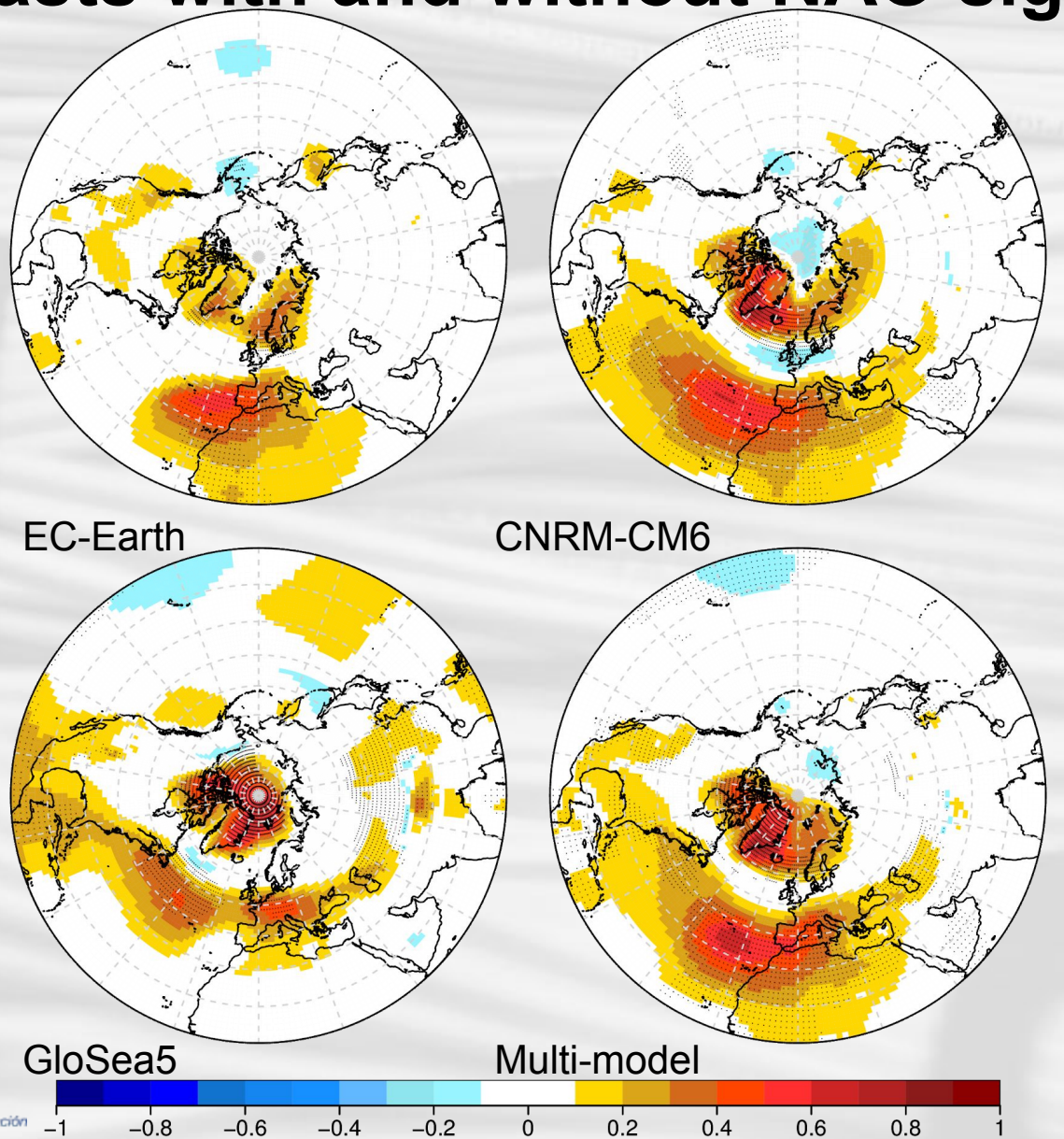
Mean DJF sea level pressure ACC difference in forecasts with and without NAO signal



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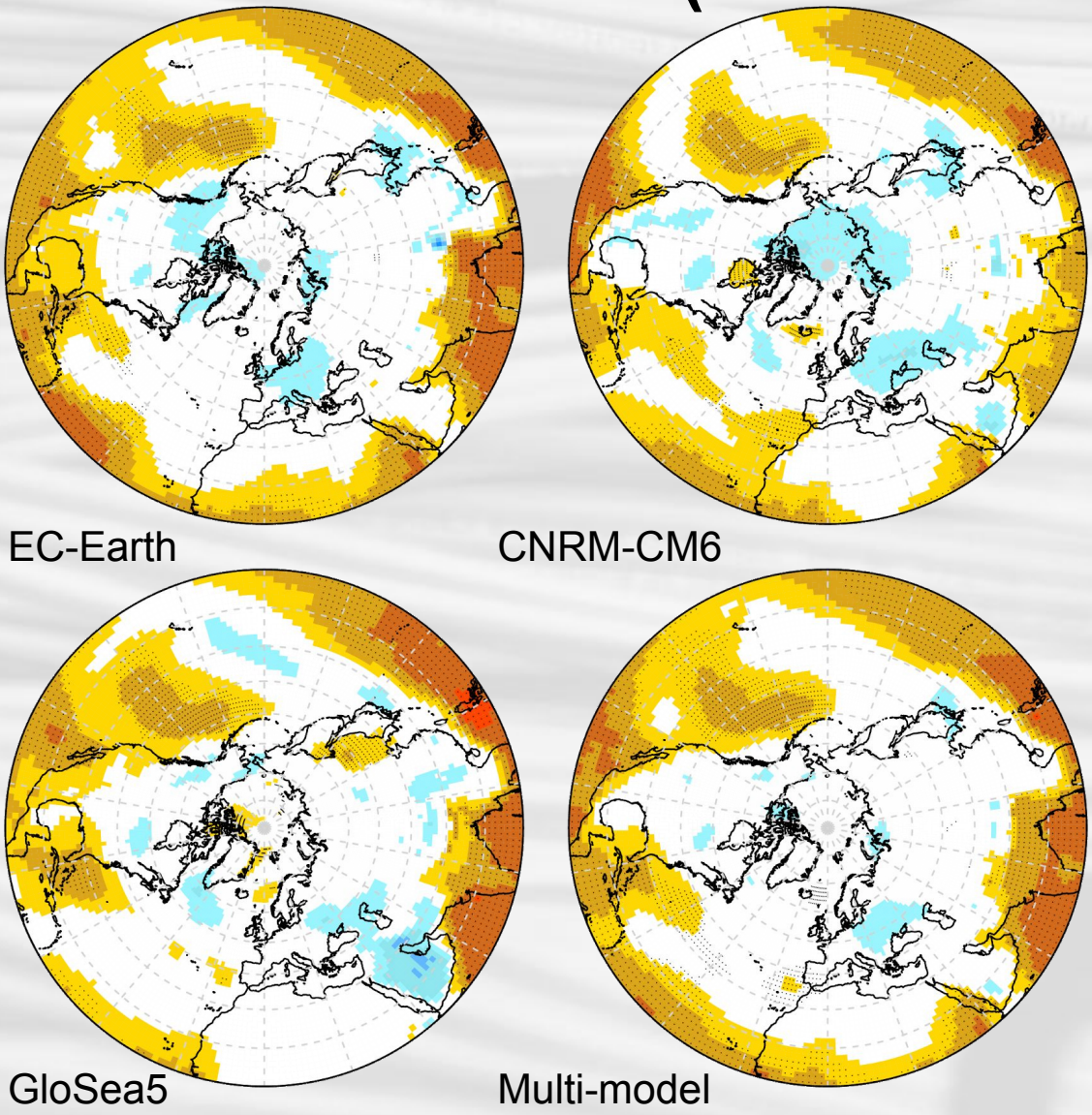
Mean DJF SPL FRCPSS (RPC-corrected)
Nov forecasts 1993-2014 (vs. ERA-Int)



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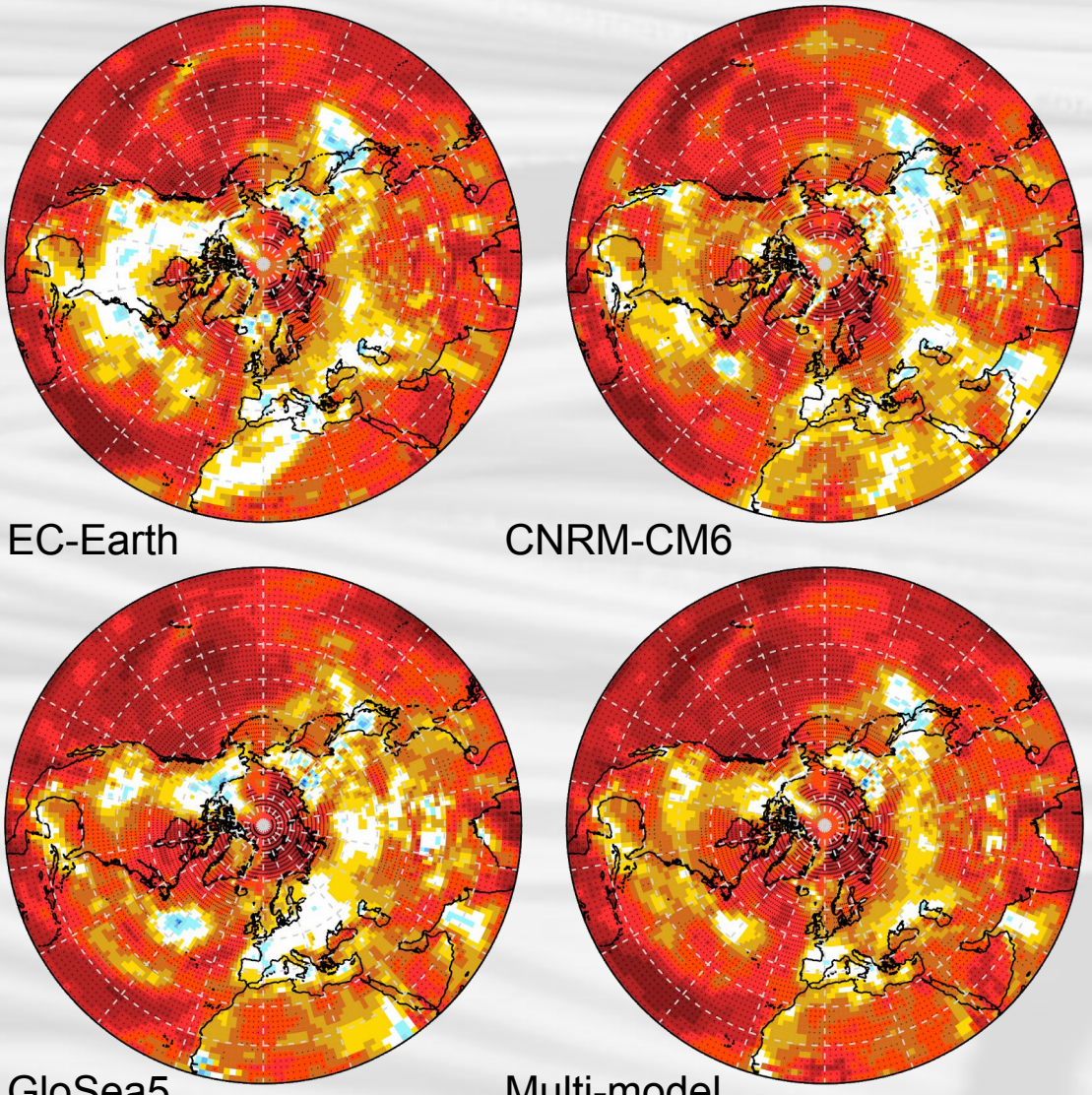
Mean surface temperature ACC
Nov forecasts 1993-2014 (vs. ERA-Int)



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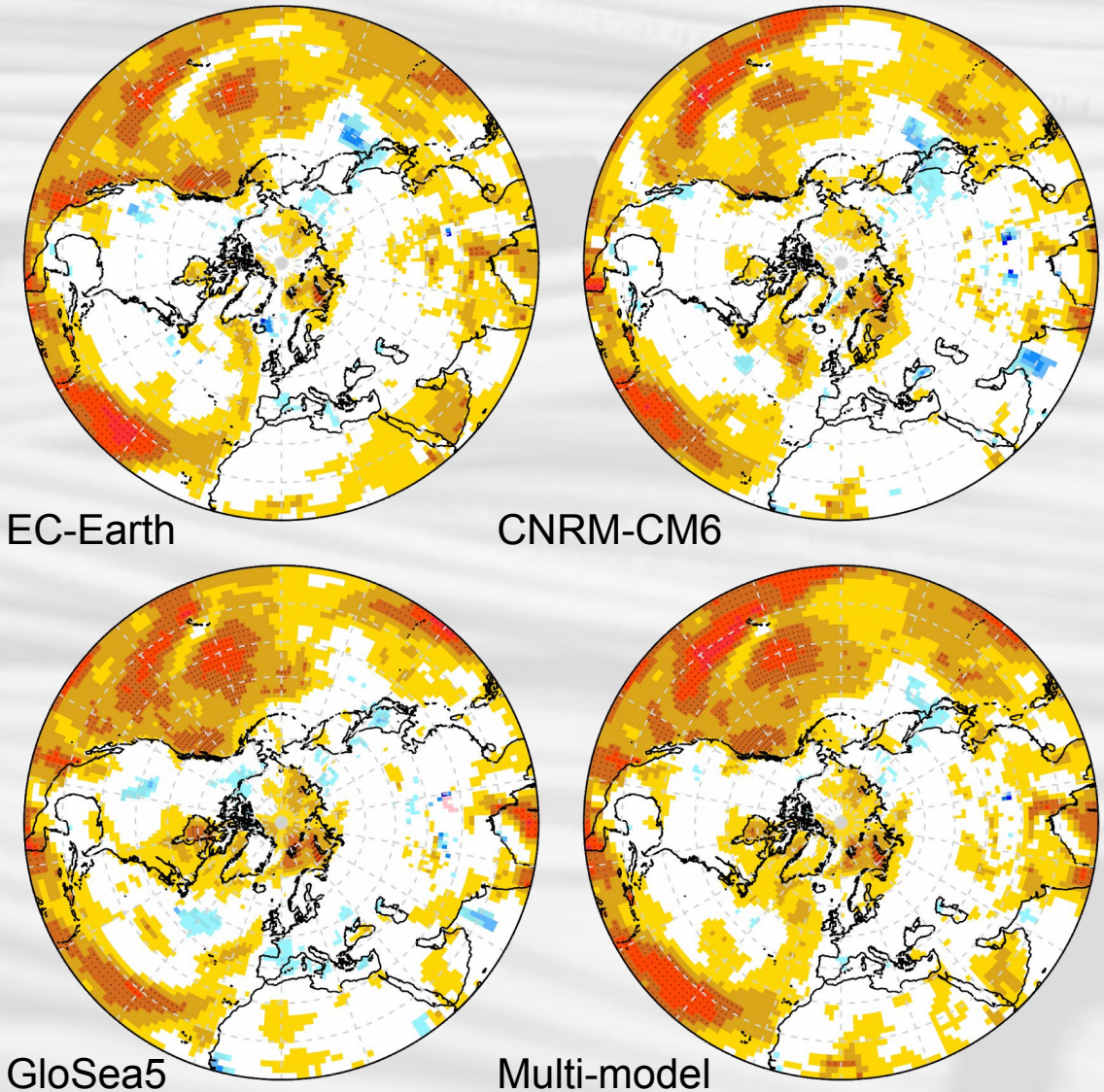
Mean DJF TAS RMSSS (RPC-corrected)
Nov forecasts 1993-2014 (vs. ERA-Int)



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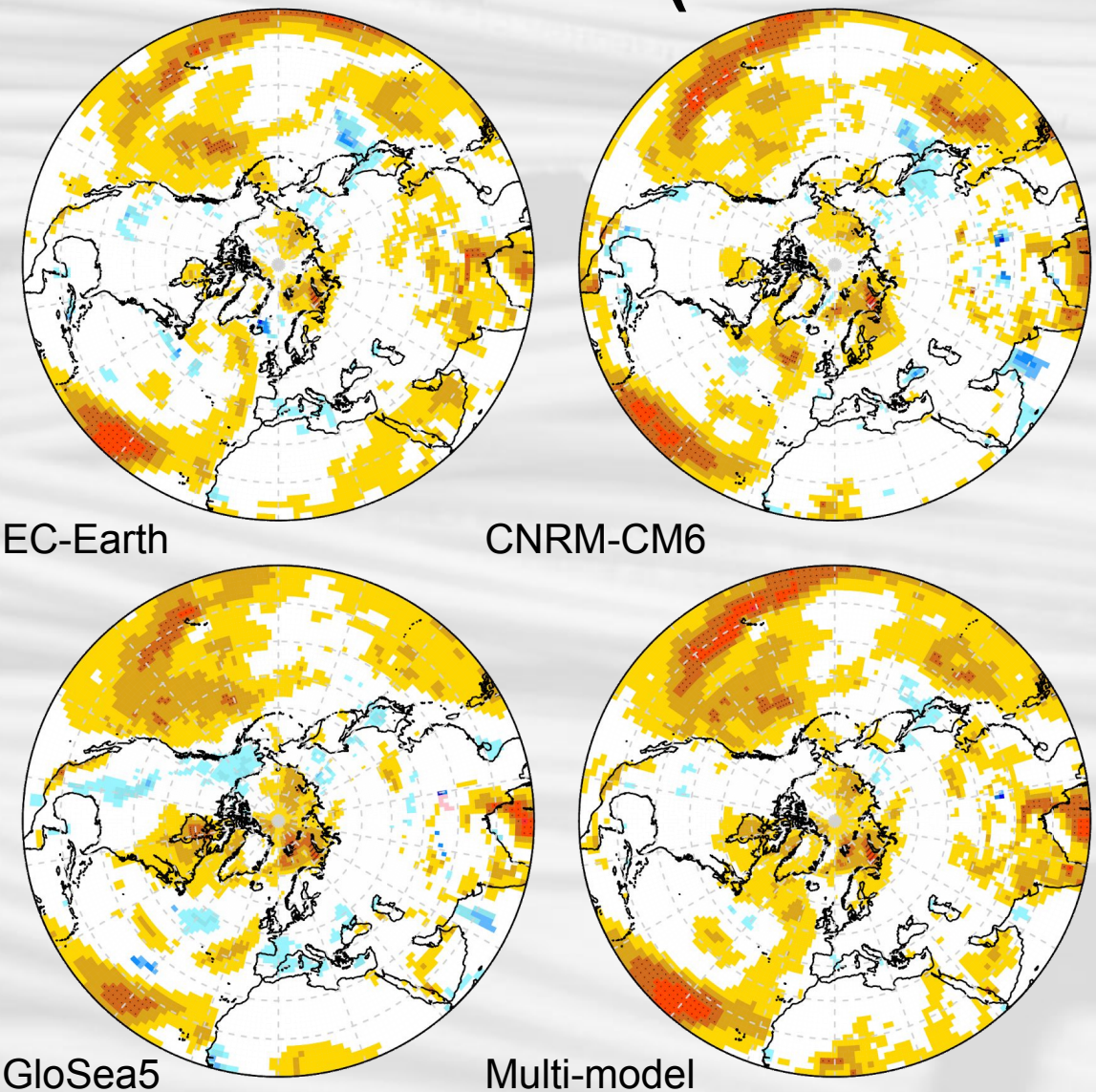
DJF temp. RMSSS without NINO
Nov forecasts 1993-2014 (vs. ERA-Int)



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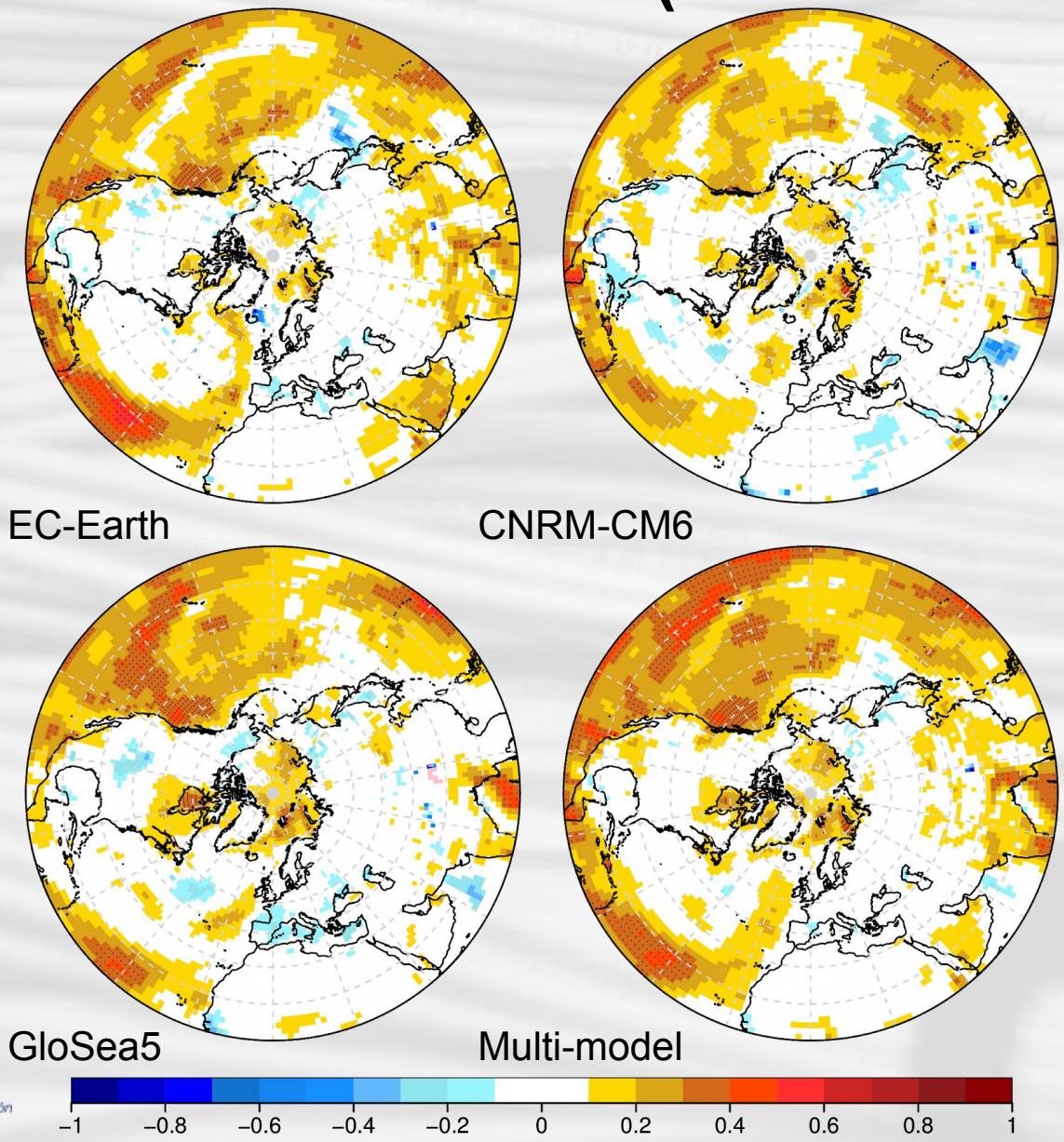
DJF temp. RMSSS without NAO
Nov forecasts 1993-2014 (vs. ERA-Int)



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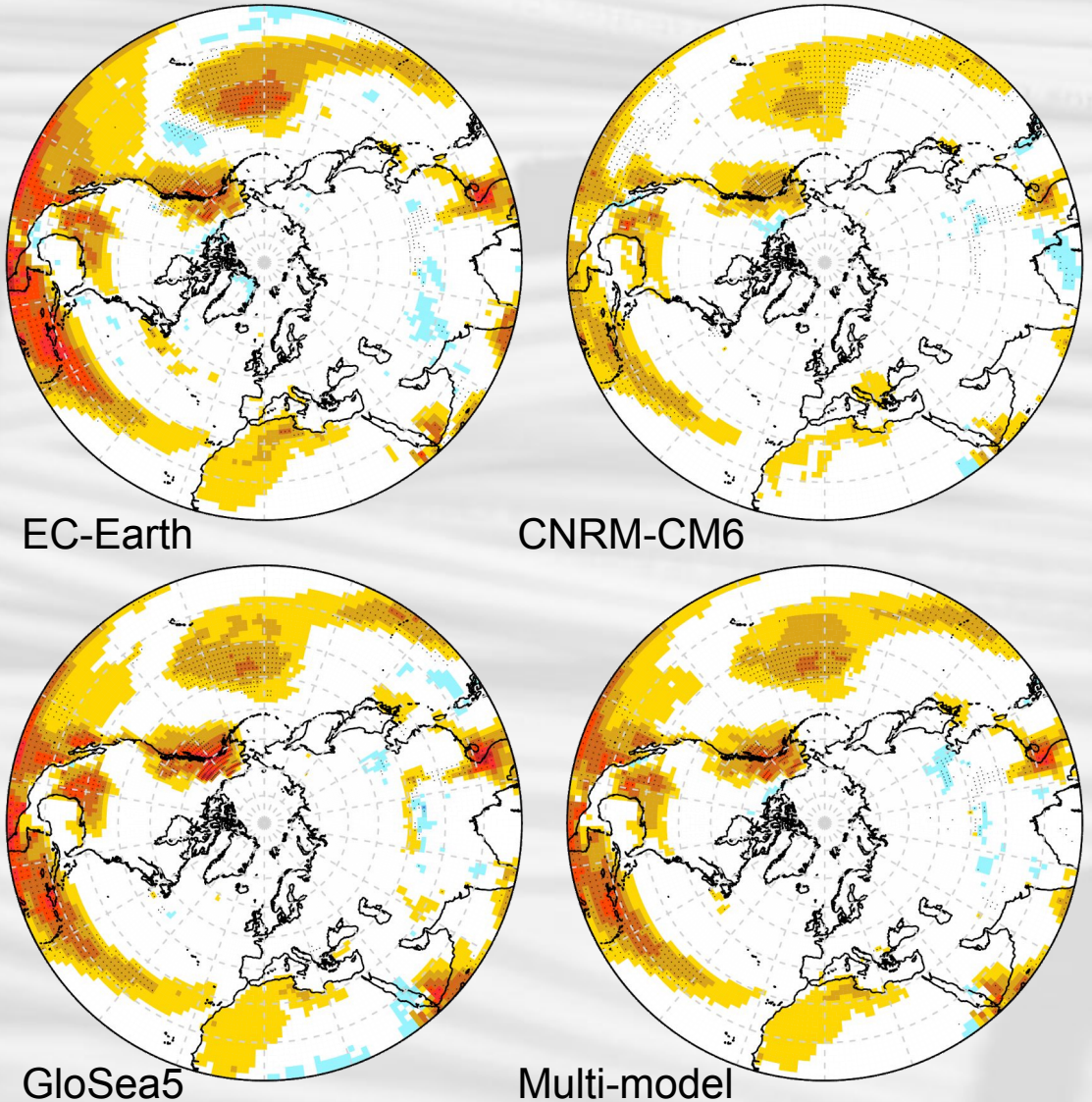
Mean DJF temperature ACC difference in forecasts with and without NINO signal



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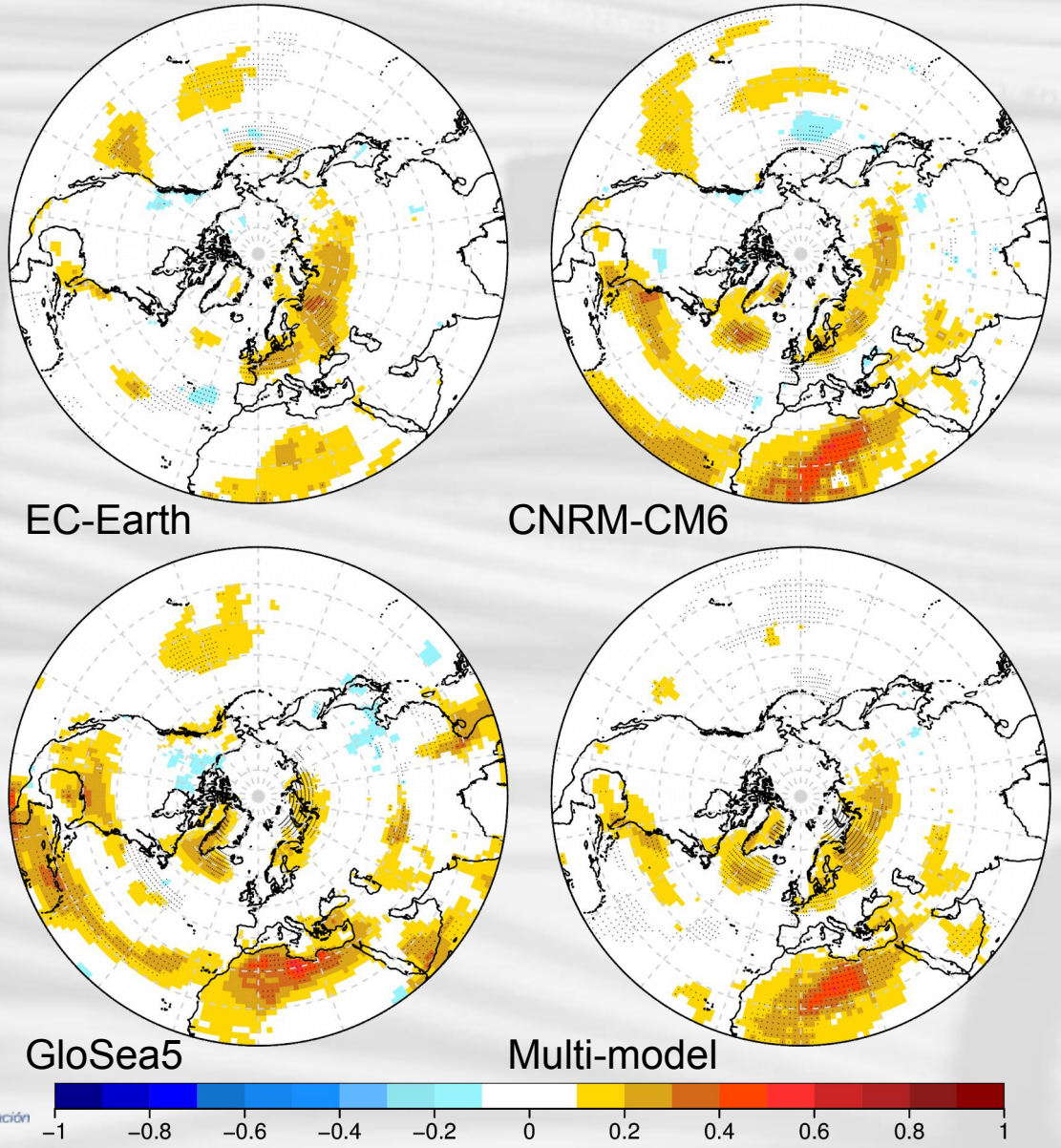

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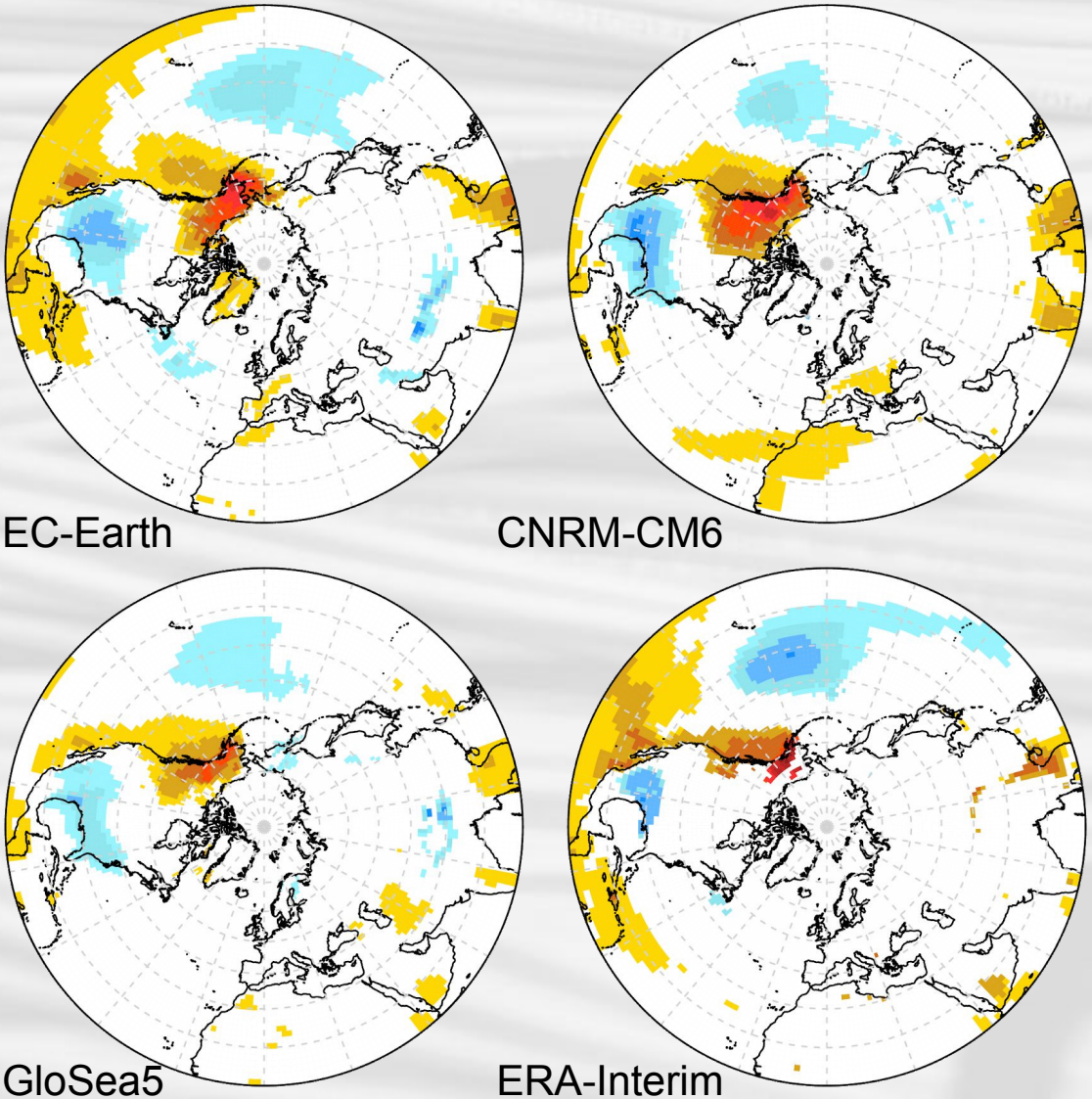
Temperature regressed onto NINO3.4
Nov forecasts 1993-2014 (in each system)



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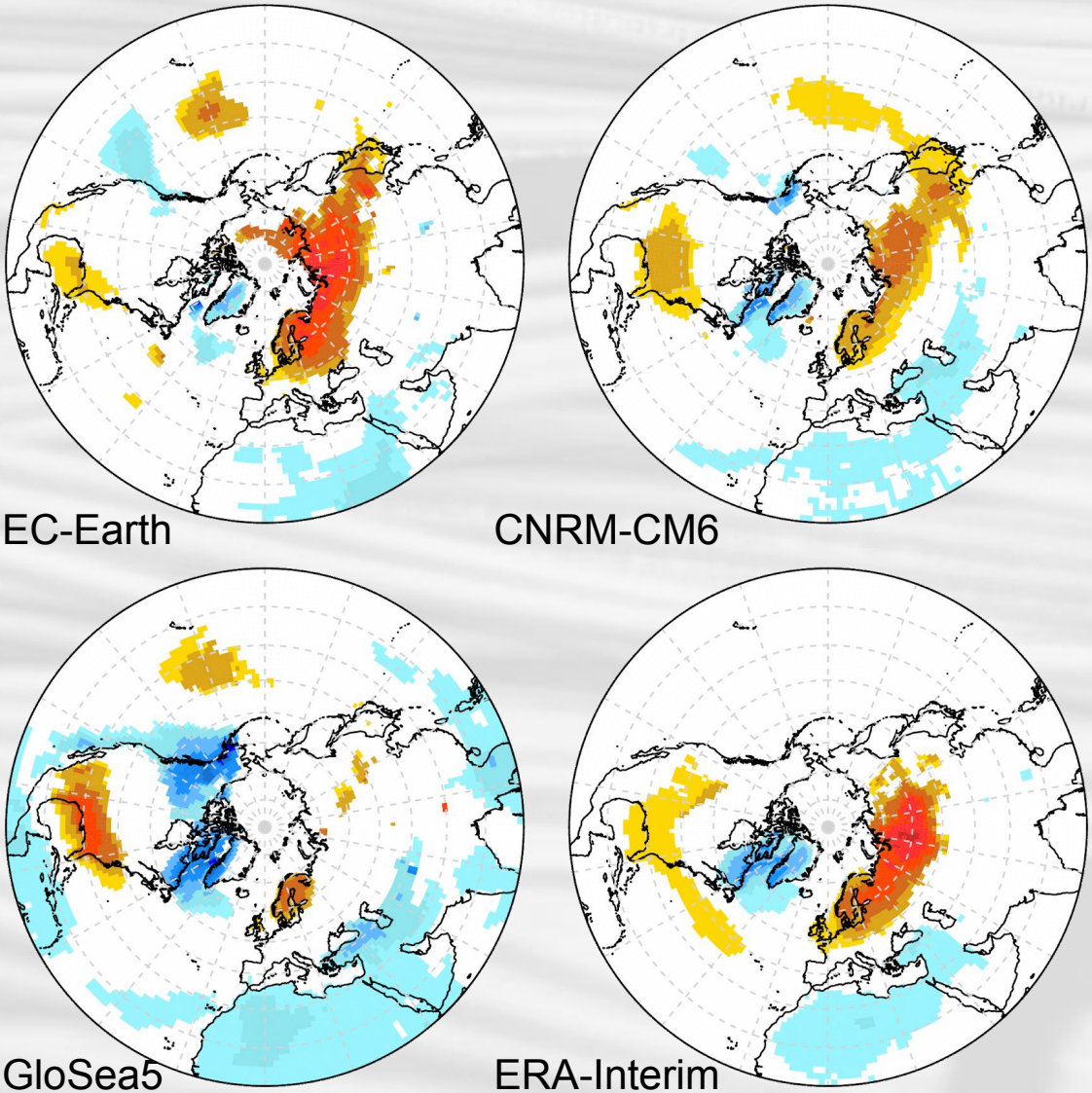
Temperature regressed onto NAOI
Nov forecasts 1993-2014 (in each system)



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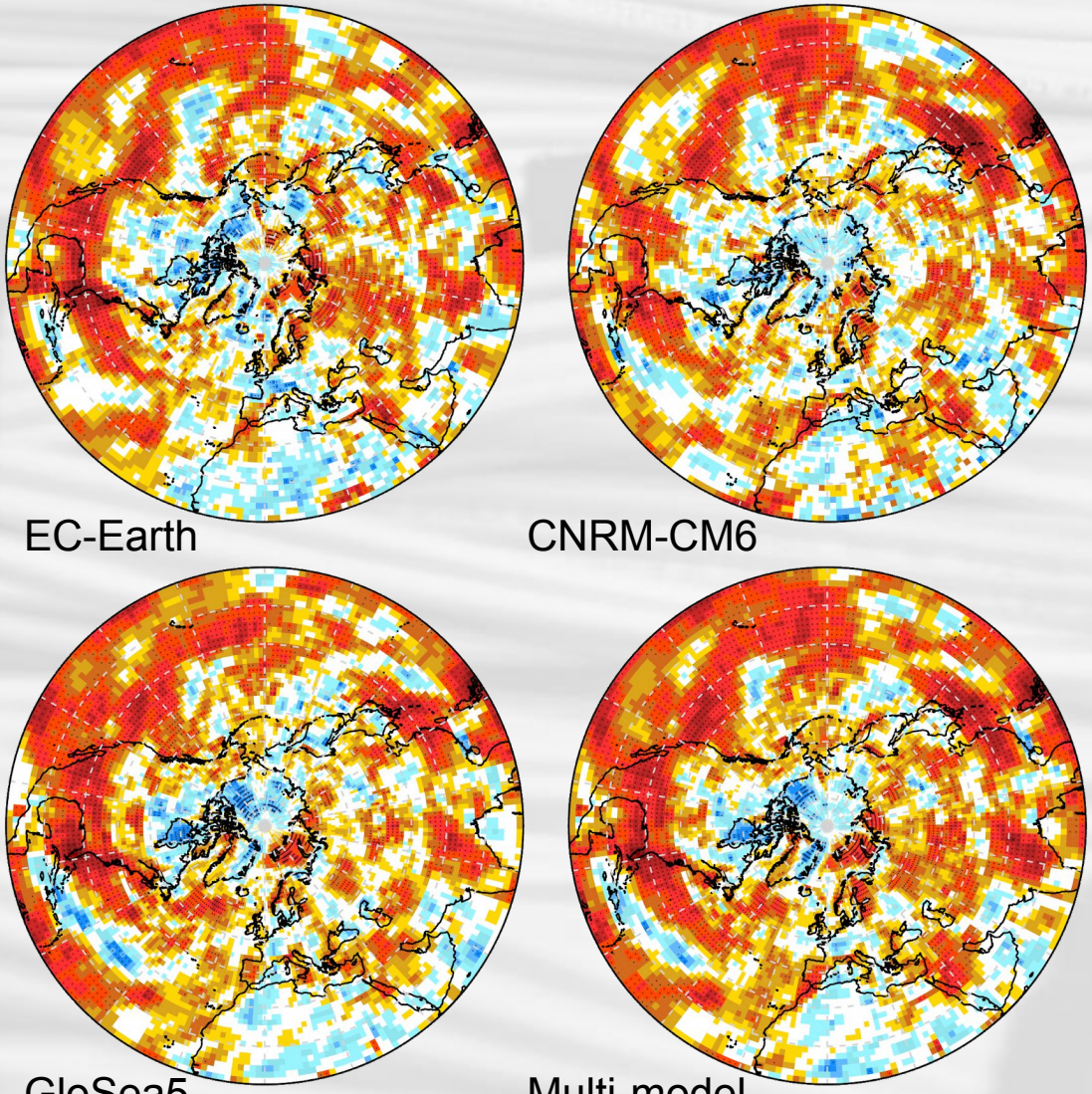
Mean precipitation ACC
Nov forecasts 1993-2014 (vs. ERA-Int)



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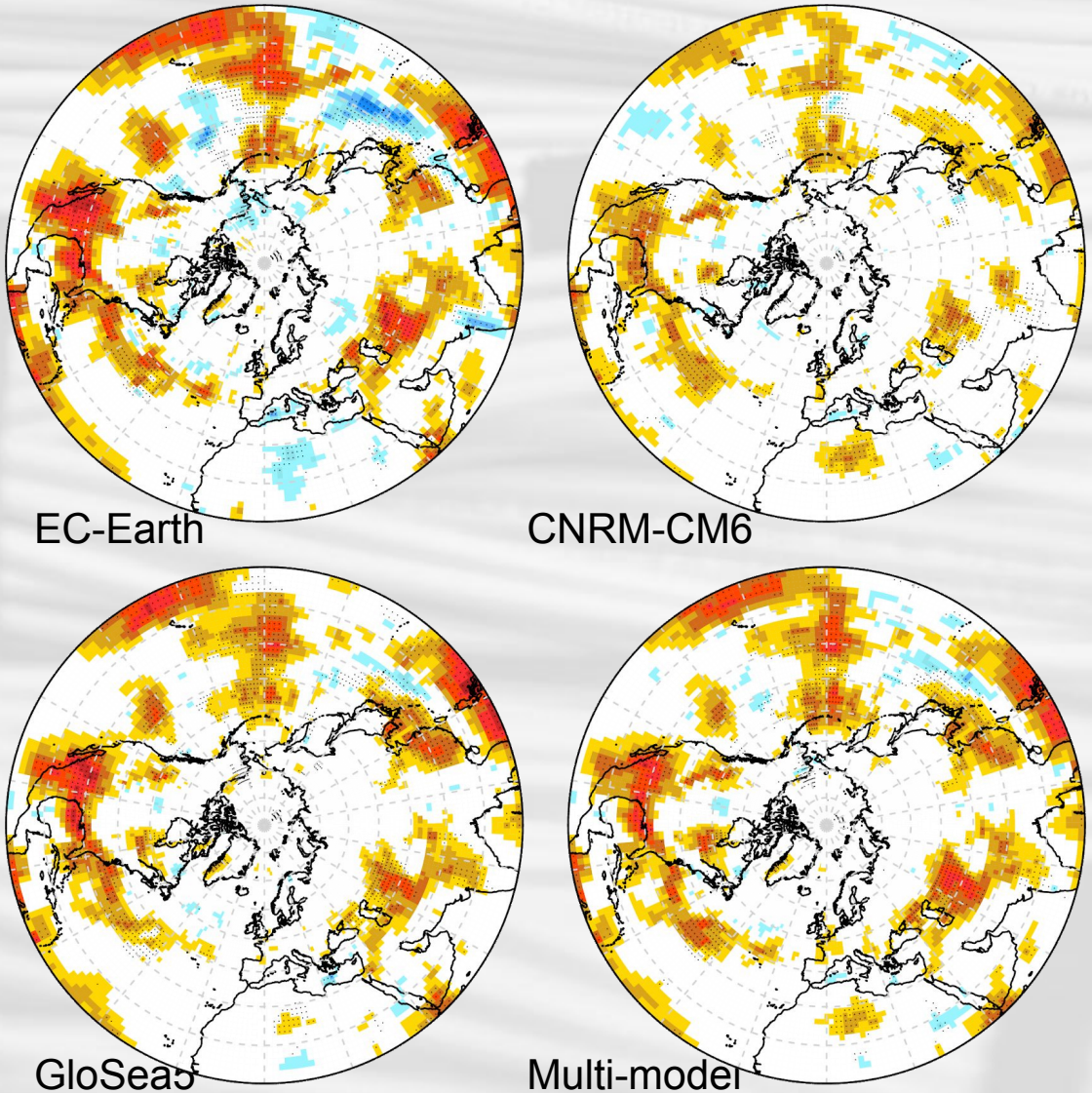
Mean DJF precipitation ACC difference in forecasts with and without NINO signal



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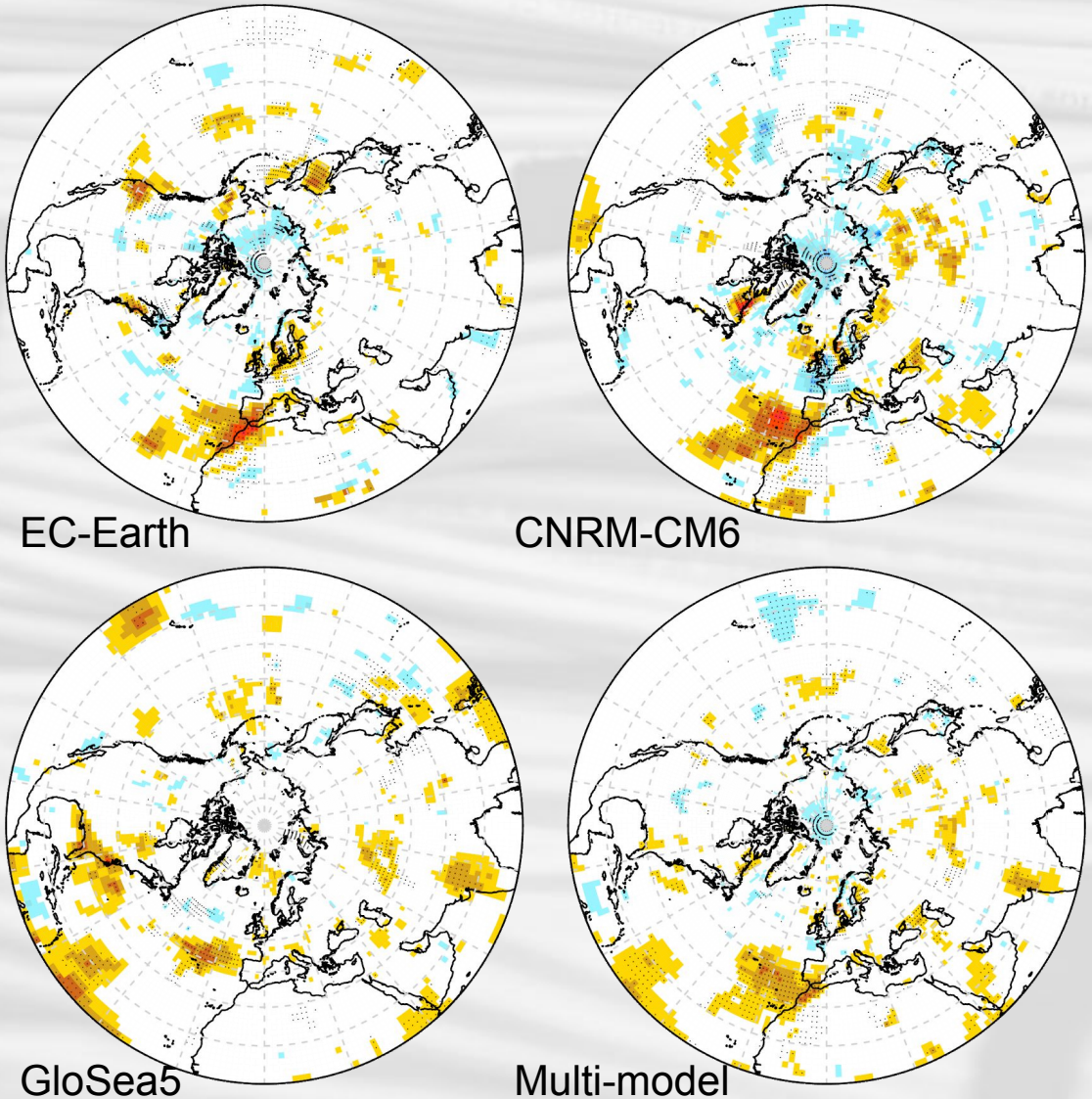
Mean DJF precipitation ACC difference in forecasts with and without NAO signal



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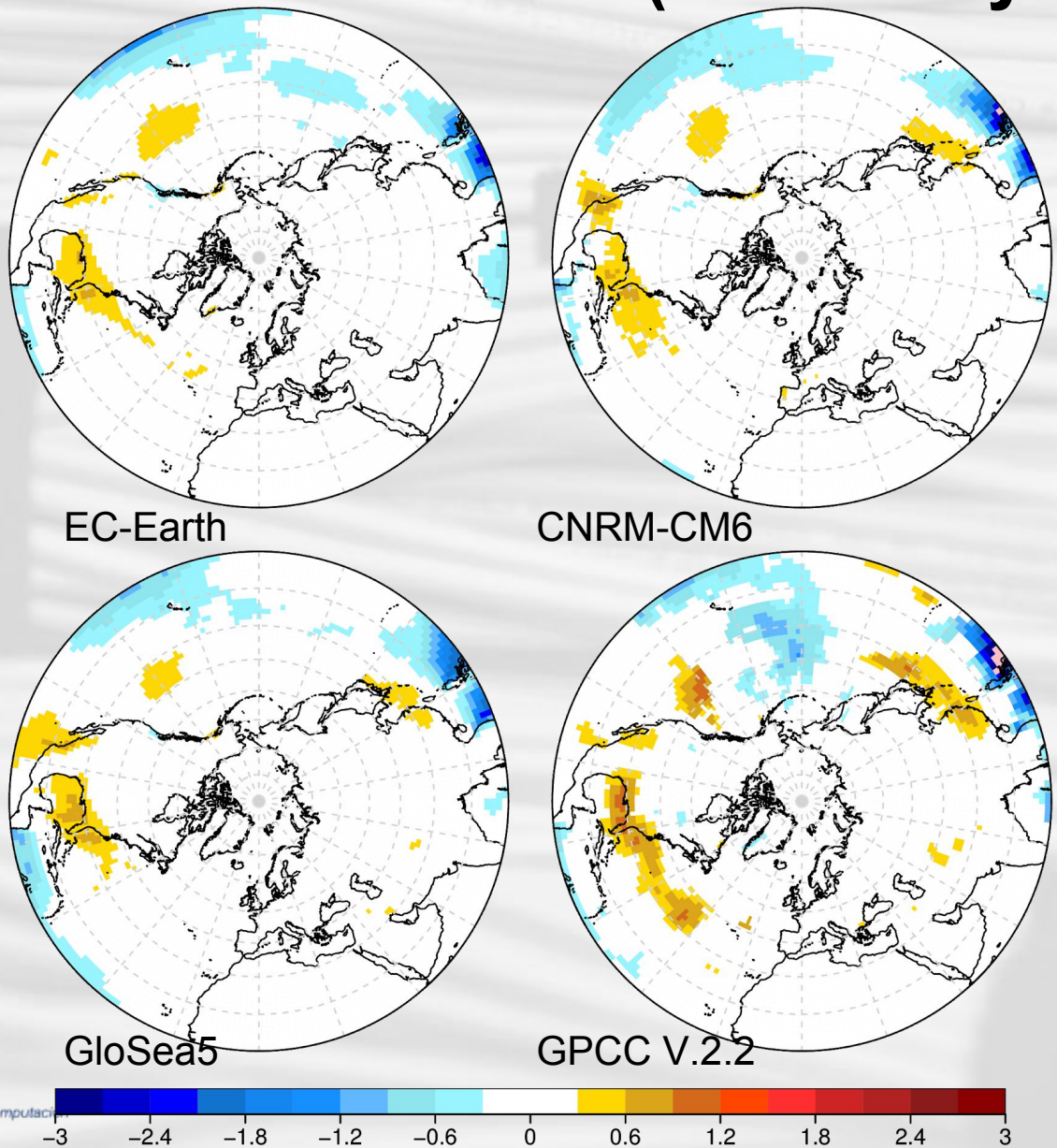
Precipitation regressed onto NINO3.4
Nov forecasts 1993-2014 (in each system)



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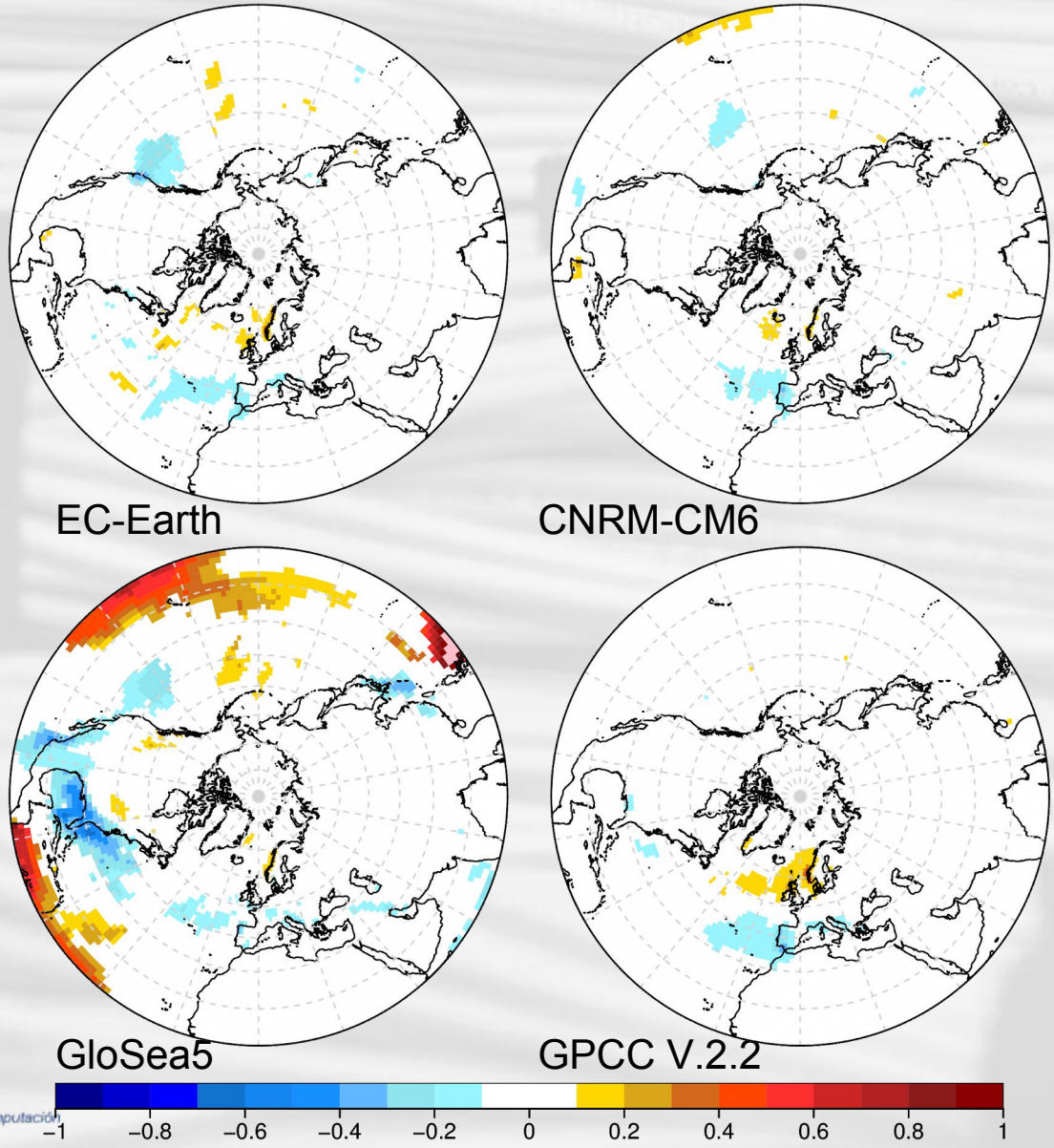

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